

CLAIMS

What is claimed is:

1       1. A laser diode/electro-absorption-modulator (LD/EAM)  
2 driver comprising:  
3           a cascoded output switch having a pair of output devices  
4 and a pair of cascode devices;  
5           a resistor providing tail current to the output devices;  
6           a predriver circuit receiving an input signal and  
7 controlling the output devices;  
8           a feedback circuit coupled to the resistor to control  
9 the modulation current of the output devices by control of  
10 bias on the predriver circuit; and,  
11          a common mode feedback circuit providing modulation  
12 dependent currents for the predriver.

1       2. The LD/EAM driver of claim 1 further comprised of a  
2 output bias circuit providing for on-chip summation of the  
3 modulation and output bias current at a low impedance node of  
4 the active cascode device.

1       3. The LD/EAM driver of claim 1 further comprised of a  
2 cascode bias circuit coupled to bias the cascode devices to a  
3 bias voltage responsive to the power supply voltage, the  
4 output bias current and the modulation current.

1       4. The LD/EAM driver of claim 3 further comprised of a  
2 PTAT bandgap reference circuit to generate biasing currents  
3 with positive temperature coefficients for the predriver gain  
4 stages.

1       5. The LD/EAM driver of claim 4 wherein the modulation  
2 current is externally adjustable.

1       6. The LD/EAM driver of claim 1 wherein the modulation  
2 current is externally adjustable.

1       7. The LD/EAM driver of claim 1 wherein the LD/EAM  
2 driver is an integrated circuit and the predriver bias  
3 current control and the modulation current are externally  
4 adjustable.

1       8. The LD/EAM driver of claim 1 wherein the LD/EAM  
2 driver is an integrated circuit and the predriver bias  
3 current control and the modulation current are externally  
4 adjustable by a single external adjustment.

1       9. The LD/EAM driver of claim 1 wherein the LD/EAM  
2 driver is an integrated circuit and the predriver bias  
3 current control and the modulation current are independently  
4 externally adjustable.

1           10. The LD/EAM driver of claim 1 further comprised of a  
2 pulldown variance circuit coupled to the predriver, the  
3 pulldown variance circuit causing a turnoff current of the  
4 predriver to be larger than a turn-on current of the  
5 predriver.

1           11. The LD/EAM driver of claim 10 further comprised of  
2 a PTAT bandgap reference circuit to generate biasing currents  
3 with positive temperature coefficients for the predriver gain  
4 stages.

1           12. The LD/EAM driver of claim 11 wherein the pulldown  
2 variance circuit is responsive to the output of the bandgap  
3 reference.

1           13. A laser diode/electro-absorption-modulator (LD/EAM)  
2 driver comprising:  
3           a cascoded output switch having a pair of output devices  
4 and a pair of cascode devices;  
5           a resistor providing tail current to the output devices;  
6           a predriver circuit receiving an input signal and  
7 controlling the output devices;  
8           a feedback circuit coupled to the resistor to control  
9 the modulation current of the output devices by control of  
10 bias on the predriver circuit;

11           a common mode feedback circuit providing modulation  
12   dependent currents for the predriver; and,  
13           a cascode bias circuit coupled to bias the cascode  
14   devices to a bias voltage responsive to the power supply  
15   voltage, the output bias current and the modulation current.

1           14. The LD/EAM driver of claim 13 further comprised of  
2   a PTAT bandgap reference circuit to generate biasing currents  
3   with positive temperature coefficients for the predriver gain  
4   stages.

1           15. The LD/EAM driver of claim 14 wherein the  
2   modulation current is externally adjustable.

1           16. The LD/EAM driver of claim 13 wherein the LD/EAM  
2   driver is an integrated circuit and the predriver bias  
3   current control and the modulation current are externally  
4   adjustable.

1           17. The LD/EAM driver of claim 13 wherein the LD/EAM  
2   driver is an integrated circuit and the predriver bias  
3   current control and the modulation current are externally  
4   adjustable by a single external adjustment.

1           18. The LD/EAM driver of claim 13 wherein the LD/EAM  
2   driver is an integrated circuit and the predriver bias

3 current control and the modulation current are independently  
4 externally adjustable.

1 19. The LD/EAM driver of claim 13 further comprised of  
2 a pulldown variance circuit coupled to the predriver, the  
3 pulldown variance circuit causing a turnoff current of the  
4 predriver to be larger than a turn-on current of the  
5 predriver.

1 20. The LD/EAM driver of claim 19 further comprised of  
2 a PTAT bandgap reference circuit to generate biasing currents  
3 with positive temperature coefficients for the predriver gain  
4 stages.

1 21. The LD/EAM driver of claim 20 wherein the pulldown  
2 variance circuit is responsive to the output of the bandgap  
3 reference.

1 22. A laser diode/electro-absorption-modulator (LD/EAM)  
2 driver comprising:

3 a cascoded output switch having a pair of output devices  
4 and a pair of cascode devices;  
5 a resistor providing tail current to the output devices;  
6 a predriver circuit receiving an input signal and  
7 controlling the output devices;

8       a feedback circuit coupled to the resistor to control  
9   the modulation current of the output devices by control of  
10 bias on the predriver circuit;

11       a common mode feedback circuit providing modulation  
12 dependent currents for the predriver;

13       a cascode bias circuit coupled to bias the cascode  
14 devices to a bias voltage responsive to the power supply  
15 voltage, the output bias current and the modulation current;

16       a PTAT bandgap reference circuit to generate biasing  
17 currents with positive temperature coefficients for the  
18 predriver gain stages; and,

19       a pulldown variance circuit coupled to the predriver,  
20 the pulldown variance circuit causing a turnoff current of  
21 the predriver to be larger than a turn-on current of the  
22 predriver.

1           23. The LD/EAM driver of claim 22 wherein the  
2 modulation current is externally adjustable.

1           24. The LD/EAM driver of claim 22 wherein the LD/EAM  
2 driver is an integrated circuit and the predriver bias  
3 current control and the modulation current are externally  
4 adjustable.

1           25. The LD/EAM driver of claim 22 wherein the LD/EAM  
2 driver is an integrated circuit and the predriver bias

3 current control and the modulation current are externally  
4 adjustable by a single external adjustment.

1 26. The LD/EAM driver of claim 22 wherein the LD/EAM  
2 driver is an integrated circuit and the predriver bias  
3 current control and the modulation current are independently  
4 externally adjustable.

1 27. The LD/EAM driver of claim 26 further comprised of  
2 a PTAT bandgap reference circuit to generate biasing currents  
3 with positive temperature coefficients for the predriver gain  
4 stages.

1 28. The LD/EAM driver of claim 27 wherein the pulldown  
2 variance circuit is responsive to the output of the bandgap  
3 reference.